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cadalmin

CMFRI Newsletter

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Signing of MoU by Dr. G. Syda Rao and Dr. Singh for commercial production of Cadalmin™ Green Algal extract in the presence of Dr. S. Ayyapan, Director General, ICAR and Dr. B. Meenakumar DDG (Fy)

CENTRAL MARINE FISHERIES RESEARCH INSTITUTE
P.B. No. 1603, Ernakulam North P.O., Cochin - 682 018

भाकृअनुप ICAR

कडलमीन™ cadalmin

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Contents

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Director Speaks

Dear Colleagues,

Wishing You All a Happy, Prosperous, Peaceful and Productive New Year 2013.

The year has begun with lots of challenges and opportunities. The prime challenge is the chlorophyll based estimation of fish abundance in the Indian EEZ and forecasting of fish catch. Though the assignment is not new, we are following the tasks left unfinished by our peers. We are seeking the collaboration with Indian Space Research Organization and we will be the forerunners in this field.

Resource mapping on a GIS platform is another area in which we are making significant progress. In two years from now, we will be coming out with exclusive mapping for the different fishery resources available in our EEZ. This will be a landmark in the history of marine capture fisheries in India.

Our untiring and perseverant efforts in developing products from the sea got another boost when we signed a Memorandum of Understanding (MoU) for commercial production of Green Algal Extract (GAe) with a Hyderabad based company, Celestial Biolabs Limited. Team CMFRI deserves full compliments for the untiring efforts.

All these developments bear testimony to our teamwork and our commitment towards achieving our goal. We have been able to build a good team over the years for taking up any challenging assignments. A team is recognized not merely by its numerics but through its team spirit. Now we are demonstrating it through our disciplined and committed effort in producing valuable outputs for the development of science and society.

With best wishes

Dr. G. Syda Rao
Director

About CMFRI

The Central Marine Fisheries Research Institute, Cochin, is a premier research Institute under the Indian Council of Agricultural Research, devoted to research and training in marine fisheries and mariculture.

CMFRI has three Regional Centres viz., Mandapam Camp, Visakhapatnam and Veraval and seven Research Centres located along the Indian coastline, catering to the marine fishery policy needs of all maritime states of the country.

Exchanging signed agreements

Green Algal extract goes commercial

MoU signed with Celestial Biolabs Ltd., Hyderabad

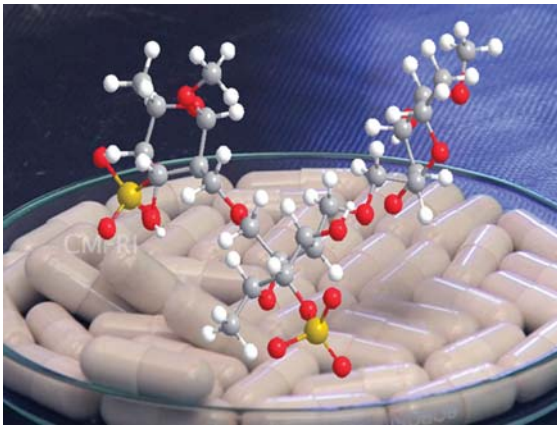
Dr. G. Syda Rao, Director, CMFRI and Dr. A.N. Singh, Managing Director, Celestial Biolabs Limited, Hyderabad signed a Memorandum of Understanding (MoU) in the gracious presence of Dr. S. Ayyappan, Secretary, DARE and Hon'ble Director General, ICAR for commercial production and marketing of Cadalmin™ Green Algal extract (Cadalmin™ GAe). Shri Arvind R. Kaushal, Additional Secretary, DARE and Secretary, ICAR, Dr. K.M.L. Pathak, DDG, Animal Science, Dr. M.M. Pandey, DDG, Engineering, Dr. S.K. Datta, DDG, Crop Sciences, Dr. B. Meenakumari, DDG, Fisheries, Dr. Gaya Prasad, ADG, Animal Health and Dr. A. K. Vasisth, ADG, PIM/ESM were also present on the occasion.

Cadalmin™ Green Algal extract (Cadalmin™ GAe) contains a unique blend of 100% natural marine bioactive anti-inflammatory ingredients extracted from selected seaweeds or marine macroalgae with a patented ecofriendly "green" technology (Indian Patent Application Nos. 2064/CHE/2010, 5199/CHE/2012). The product is effective to combat arthritic pain and inflammatory diseases in human beings. The active principles in Cadalmin™ GAe competitively inhibit pro-inflammatory mediators, resulting in decreased production of inflammatory prostaglandins and leukotrienes, and its activity was found to be superior to some of the synthetic non steroidal anti-inflammatory drugs available in the market.

The efficiency of Cadalmin™ GAe to inhibit inflammatory enzymes cycloxygenase$_{II}$ and lipoxygenase$_{V}$ stands at 64-94% as compared to 40-52% for a popular painkiller that was also reported

The scientists of CMFRI identified the seaweeds, which are natural bounty of sea, possess valuable anti-inflammatory compounds to deliver a 100% vegetarian nutraceutical product Cadalmin™ GAe that can offer relief to the millions of patients suffering from arthritis and associated joint pain

Cadalmin™ Green Algal extract



to induce adverse effects on various metabolic and physiological parameters in human beings. A lower cycloxygenase$_{I}$ / lipoxygenase$_{V}$, cycloxygenase$_{I/II}$ indices (<1.0), simultaneous inhibition of cycloxygenase$_{II}$ and lipoxygenase$_{V}$ enzymes and significant *in vivo* activity indicate higher selectivity and lower side-effect profiles of Cadalmin™ GAe than the synthetic non-steroidal anti-inflammatory drugs. Animal model experiments proved the efficiency and safety of this nutraceutical.

Time dependent *in vivo* animal model studies on mammalian subjects revealed the inhibition of inflammatory response to the tune of 73-76% by Cadalmin™ GAe and its active components as compared to a maximum of 70% for the popular painkiller aspirin that was reported to induce adverse effects on various human metabolic and physiological parameters. Cadalmin™ GAe suppresses the edema produced by histamine, and exhibits its anti-inflammatory action by means of either inhibiting the synthesis, release or action of anti-inflammatory mediators.

Seaweeds at Vedalai, Tamil Nadu

Cadalmin™ GAe contains a unique blend of 100% natural marine bioactive anti-inflammatory ingredients extracted from selected seaweeds with a patented ecofriendly "green" technology

Cadalmin™ GAe is a pure natural and 100% vegetarian product, with its therapeutic values, is an import substitute with an international appeal, providing great market potential especially for the large vegetarian population in India and abroad. The unique biochemical engineering techniques adopted to retain the anti-inflammatory activities in the preparation of Cadalmin™ GAe assures it's higher shelf life. The product has been proved to be safe from the acute and chronic toxicity studies on experimental subjects. The hygienically processed active ingredients are housed in low moisture content 100% plant-based Naturecaps capsules that meet the dietary or cultural needs of customers that follow a vegetarian lifestyle.

The mean lethal dose (LD_{50}) of Cadalmin™ GAe was found to be greater than 4000 mg/kg body weight of the mammalian subjects that indicate the safety of the product. As part of the further safety assessment, feeding of Cadalmin™ GAe even at a dose upto 2500 mg/kg body weight did not induce significant change in body weights, hematological indices, histopathological, and serum biochemical parameters between the control and treated groups indicating that it has no toxicity to the experimental animals.

Farmers collecting seaweeds at Vedalai, Tamil Nadu

Cadalmin™ GAe was distributed to more than 400 patients suffering with chronic joint pain and arthritis, and questionnaire and clinical trial-based studies revealed that more than 98% of the respondents were satisfied with the product with about 70-85% relief in joint pain and arthritis. None of the respondents reported any side effects. The diagnostically useful autoantibody termed as Rheumatoid Factors (RFs), which are the most useful prognostic marker for rheumatoid arthritis, significantly reduced from more than 300 IU/mL to less than 20-35 IU/mL within a period of two months of consuming the product. This product will be commercially produced and marketed by Celestial Biolabs Limited, a GMP/ WHO certified pharmaceutical Company based at Hyderabad.

(Reported by Kajal Chakraborty, Marine Biotechnology Division)

Seaweeds belonging to different species were studied and among them those which possess high bioactivity were processed and enriched to obtain Cadalmin™ GAe, which contains useful anti-inflammatory ingredients

Research Highlights

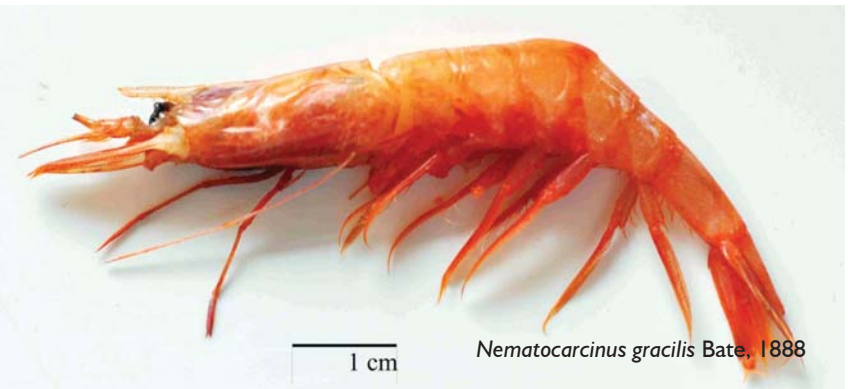
Marine Fish Landings, 2012 touches an all time high indicating high sustainability

Sundrying of fishes at Arthungal

Annual marine fish landings for India registered an all-time high of 3.94 million metric tonnes as per the National Marine Fisheries Data Centre(CMFRI) estimates for the year 2012. Kerala is the highest contributor of production with 8.39 lakh tonnes. The major drivers for this hike in production are the increased landings of oil sardine, threadfin breams, silver bellies and cephalopods. Oil sardine dominated the marine capture landings with a recorded new height of 7,20,250 tonnes, All maritime states and union territories except West Bengal and Orissa witnessed an increase in production during 2012 compared to the previous year.

(Reported by FRAD, Cochin)

First record of a deep-sea shrimp *Nematocarcinus gracilis* in the Bay of Bengal



Nematocarcinus gracilis Bate, 1888

The deep-sea caridean shrimp *Nematocarcinus gracilis* Bate, 1888 (Nematocarcinidae)is reported from Bay of Bengal for the first time. The specimen was collected from the Bay of Bengal at depths of 520-700 m off Chennai during an exploratory survey (Cruise No: 291) on-board FORV *Sagar Sampada*

(Reported by Pelagic FIsheries Division)

Mass spawning of Scleractinian corals in the Lakshadweep Archipelago


Goniastrea sp.

Multispecific synchronous spawning of scleractinian corals has been observed in the Lakshadweep atolls on the morning of sixth day after new moon during March. A team of CMFRI scientists of the Marine Biodiversity Division who were carrying out survey at Bengaram-Tinnakkara Island cluster witnessed this phenomenon at 10.00 am of 18th March 2013.

Most coral species devote a substantial part of their reproductive energy to sexual reproduction and employs a variety of methods. Though an external fertilisation yields greater amount of genetic mixing, such corals face severe problem of washing away of their gametes before fertilisation can occur. Scleractinians are equipped to overcome this by synchronising the act of releasing gametes by different colonies. This may lead to the formation of thick layer of egg mass on the surface of reef waters. Mass spawning is the nature's solution to that problem of how to get sperm and eggs from parents that are separated widely and that live in an environment of never-ending water movement.


Acropora sp.


Psammacora sp.


Coral egg mass collected from Bengaram lagoon

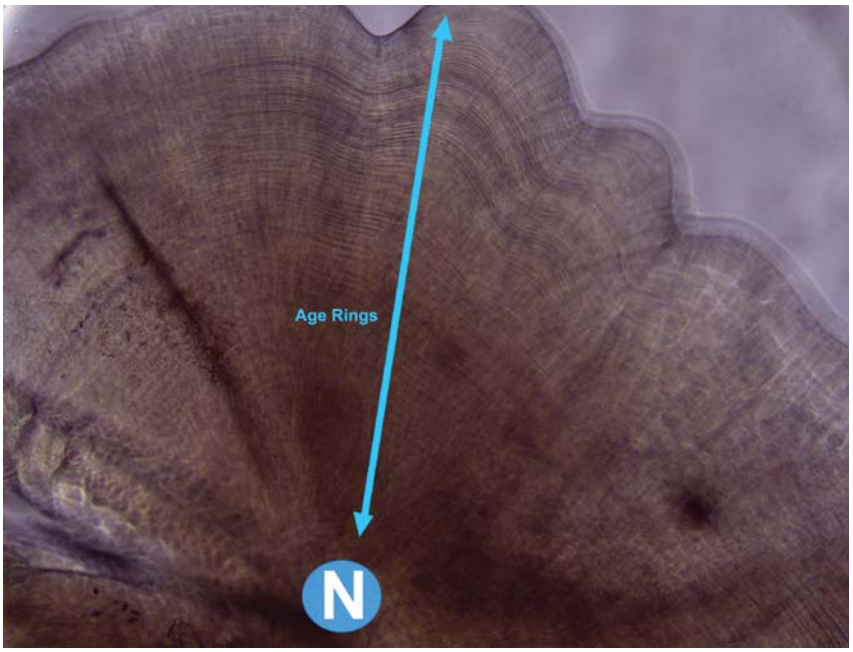
World over the time of release of gametes during mass spawning events has been reported as just after sunset during the late winter period when temperature rises sharply.But current spawning has been particularly noticed on day time around 10.00 am just before the lowest low tide of the day. Though mass spawning has been reported earlier from Maldives and Gulf of Mannar, this is for the first time it has been noticed in Lakshadweep atolls.

(Reported by S. Jasmine,K.R.Sreenath, L.Renjit and Jose Kingsly, Marine Biodiversity Division)


A view of Bengaram Island and adjacent lagoon

Fish Ageing studies

Otoliths, otherwise known as ear stone are found in endolymphatic pores, on the dorsal surface of the head of fin fishes. The morphological structure of otoliths differs from species to species. Otoliths undergo process of calcium carbonate deposition in response to fish growth which is considered as age rings. Under the NAIP project "A value chain on oceanic tuna fisheries in Lakshadweep sea "a new fish ageing laboratory was set up. Fish age studies were conducted using sagittal otoliths of various tuna species and other pelagic finfishes. The isolated sagittal otoliths were embedded in special fiber glass resin for sectioning. A High Speed Otolith Slicer (HSOS) was also indigenously designed for the sectioning works and 1-3mm thickness sections were made. The sectioned otoliths were polished for ring observation and age validation is under progress.



Age rings observed in Dolphin fish *Coryphaena* spp.

(Reported by Pelagic FIsheries Division)

Puffer fish proliferate in Arabian Sea as predators vanish

Since 2006 fishermen in Kerala have been complaining about the extraordinary abundance of puffer fishes in the Arabian Sea during the post-monsoon period and the extensive damage it causes to their nets and catch. These fishes are able to cut through the nylon nets once they are caught causing extensive damage to nets. Also, once within the nets they bite at random on other catch, particularly valuable squids and cuttlefishes, decreasing their commercial value. The damage to nets and catch has not been formally estimated but is apparently running into several crores of rupees as per newspaper reports. The puffer fishes belonging to family Tetraodontidae are uniquely characterized by sharp plate-like and a spiny or prickly loose-skinned rib-less body which can take in water to become a prickly or spiny ball. These odd looking fishes are virtually a no-no as prey for most predatory fishes in the sea because of these characteristics.

An analysis of fish catch time series from the Arabian Sea off Kerala revealed that there is a rapid increase in the catch of puffer fishes in recent times with serious economic consequences to fishermen. Concurrently, there has been a decline in some of the major predators of puffer fishes, namely, catfish, cobia and sharks. The loss of predatory control on the puffer fish biomass due to depletion of its predators (mainly cobia) is probably the principal cause for the increase in the biomass of its immediate prey. Although, a trophic cascade could not be detected, there are signals of a predation-induced top-down effect on one mid-level carnivore population in the Arabian Sea off Kerala.

The above data lead us to believe that there are signs of the beginning of a trophic cascade in the Arabian Sea resulting in increased biomass of puffer fishes from 2007. Certainly, there are signals of a predation-induced top-down effect on one mid-level carnivore population in the Arabian Sea off Kerala. The Encyclopedia Britannica defines a trophic cascade as an ecological phenomenon triggered by the addition or removal of top predators and involving reciprocal changes in the relative populations of predator and prey through a food chain, which often results in dramatic changes in ecosystem structure.

When we looked for cascading effects on the prey of puffer fishes (anchovies and squids), we did not get a clear trend. It is possible that in tropical seas, the high biodiversity, the large diet breadth of many predators and the relatively fast generation times of many species prevent the occurrence of clear trophic cascades. It has been stated that trophic cascades are most common and clearly evident in low-diversity benthic marine ecosystems. Besides the increase in puffer fish abundance is fairly recent (within the last 6 years), and this period is probably not sufficient enough for ecological-scale population changes to occur. A close watch and monitoring of population biomass changes and abiotic factors are necessary to discern trophic cascades in tropical seas such as the Arabian Sea. For details, see Current Science 104 (4): 426-429.

(*Reported by K. Sunil Mohamed , T.V. Sathianandan, V. Kripa and P.U. Zacharia*)

m-KRISHI® Fisheries Service making fishermen happy

An achievement of Mumbai RC

Till now 54 mobile handsets with m-KRISHI® Fisheries service have been distributed in 56 fishermen co-operative societies covering whole Raigad coastline and training for using the application was given to fishers. Each of these 54 direct beneficiaries of mobile service were expected to train another 20 fishers in that village. So at present the total beneficiaries of the technology are 1080 fishers (i.e. 54x20= 1080) and the number is likely to increase with the progress of the project activities. They reported that the service is very helpful in terms of time saving, increase in catch, and decrease in fuel consumption which in turn will benefit their livelihood. By following PFZ advisory through mKRISHI® Fisheries mobile service some fishers got good catch. One purse seine boat from Rewas-Bodni village got 20 tonns of Ghol fish catch in one day. Three trawler boats from Dighi village got 3 tonne, 4.5 tonne and 1.5 tonne of seer fish, mackerel and prawns catch in one day. The major concern is regarding the range of mobile networks in deep sea (at least 40-50 km required).

(Reported by V.V. Singh, Mumbai RC)

Bumper catch of *Protonibea diacanthus*/ "Ghol" (about 20 tons costing approx. ₹ 3.45 crores) in Rewas-Bodni village of Raigad district, Maharashtra by following advisories of m-KRISHI® Fisheries Service/ INCOIS

'Ghost nets' in coastal waters of Kerala - Is the fishing area becoming a dumping ground?

Skeletal remains of the whale

On 25th of February 2013 a huge abandoned fishing net in the fishing area was washed ashore on the beach of a fishing village, Edavanakadu in Vypin Island, Kerala. Discarded fishing nets or "Ghost nets" are damaged nets which cannot be used for fishing operations are thrown by fishermen in fishing area. These partly torn nets drift on the surface or column waters and at times they get entangled on submerged objects or rocks and sway in the aquatic environment.

The ghost nets, either drifting or swaying, act as traps and entangle both fauna and other non-degradable waste objects like plastics, metal drums etc. This is the first report of a ghost net being washed ashore in the coastal area of southwest coast of India.

Entangled in the 32.5 m long net was a small piece of skeletal remains of a whale. The net had entangled ropes, plastic bottles, buoys, cans and also jigs with steel hooks. The ghost net consisted of nets with different mesh sizes and approximately twenty four different types of nets were present.

Details of non-biodegradable items entangled in the ghost net

Non Biodegradable Litter items	Number
Plastic bottle	13
Plastic jug	4
Plastic bouy	5
Plastic cover	9
Thermocoal	7
Jigg	1
Total Number	39

- Disposing such nets is a problem for coastal villagers and in this instance they had decided to dry the net and sell it to the scrap yard where it will be melted and reused for other purposes.
- This incident exposes the fact that danger is lurking in the coastal waters of Kerala which has resident populations of several dolphins. Also there are chances of such ghost nets getting entangled in the propeller of boats.

(Reported by Fishery Environment Management Division, Kochi)

Signal testing cruises for m-KRISHI® Fisheries mobile based advisory service by Mumbai RC

Signal testing cruise details along with track recorded

To increase the adoption of m-KRISHI Fisheries mobile based service by extending the mobile range deep in the sea (upto 50 km off Raigad coast) on the need based demand of the fishers in Raigad district three cruises were carried out by Mumbai RC to test Base Transreceiver Station (BTS) signal both for CDMA and GSM with TCS and TATA Tele Services team under NAIP Component-3, (World Bank-GEF funded) climate change adaptation project. The track of the trip with the help of Vessel tracking System (VTS) was also validated in real time.

Signal testing cruise for testing BTS signal for CDMA and GSM

Interaction of World Bank officials with beneficiaries of the m-KRISHI Fisheries service at CSA, Alibaug on 19.01.2013

Largest eyebrow wedgefish landed at Visakhapatnam

Male *Rhynchobatus palpebratus* landed at Visakhapatnam Fishing Harbour

A male specimen of the eyebrow wedgefish *Rhynchobatus palpebratus* Compagno & Last, 2008 was landed at Visakhapatnam Fishing Harbour on 8.2.2013. The total length of the specimen was 112 cm with an approximate weight of 7 kg. This is the largest size reported so far for the species. The previous largest size reported was 103 cm for the species (Fish Base, 2013). Wedgefishes belong to the family Rhynchobatidae which consists of 6 species. Of this 5 species have been evaluated as either Vulnerable/Endangered by the IUCN (IUCN, 2012).

(Reported by Muktha Menon, M.V. Hanumanth Rao and Madhumita Das, Visakhapatnam RC)

Purse-seining trials with light shows encouraging results

MV Titanic the converted squid-jigger and Angel, a purse-seiner set out for light fishing trials off Mangalore on 14 January, 2013 as part of trials under the NAIP project on oceanic squids. The fishing grounds were located in the coastal waters of 12°53N to 73°39E at 5-27 m depth. Onset of fish aggregation, setting the gear, pursing, hauling and timing of light-fishing operations were standardised by fishing cruises conducted on 11th and 12th January, 2013. The squid jigger equipped with 18 metal halide lights (1.5 kW each) illuminated the fishing grounds from 1900h for fish aggregation. Aggregation near the vessel was observed after three hours of illumination. The night assemblage was dominated by the pelagic mix fish comprising mainly of Thryssa spp. The night purse-seining operation from 1200h to 0230 h under illumination yielded 8,200 kg of fish and cephalopods. Besides lesser sardine, catch comprised of *Rastrelliger kanagurta, Caranx sp., Scomberomorus commerson, Trichiurus lepturus, Chorinemus sp., Parastromateus niger, Coryphaena sp., Uroteuthis photololigo duvauceli etc.*

Regulatory Measures in Vembanad Lake Black Clam Fishery

The State of Kerala leads India in the production of clams with the black clam, *Villorita cyprinoides*(Family, Corbiculidae) from Vembanad Lake contributing nearly 45,000 t every year. Nearly 4000 fishermen organized into 8 cooperative societies are involved in harvesting these clams, for both meat and shell. Currently there is very little management and regulations existing for this clam fishery and consequently, the fishermen have been facing declining catches and income.

Recognizing these, the ATREE (Asoka Trust for Environment & Ecology), an NGO organized a Clam Fishermen Cooperative Meeting at the Vaikom Clam Fishermen Society Hall on 16th February, 2013. During the meeting, scientists of CMFRI (MFD) provided technical expertise to clam fishermen on responsible clam fishing by way of increasing mesh size of nets, observing a closed season during peak spawning and spat fall and new programmes for clam farming using naturally settled seeds.

Dr. K. S. Mohamed, Head, MFD addressing clam fishermen at Vaikom on responsible clam fishing

The Action Council of Black Clam Societies have decided to take up all the suggestions put forward by CMFRI scientists during the current year itself with the help of ATREE.

(Reported by Molluscan Fisheries Division)

Landing of juvenile tiger shark, *Galeocerdo cuvier* at Visakhapatnam Fishing Harbor

Landing of juvenile tiger shark, *Galeocerdo cuvier* at Visakhapatnam Fishing Harbor Tiger shark, *Galeocerdo cuvier* (Péron & Lesueur, 1822) has a circumglobal distribution in tropical and warm temperate seas. It is included under Appendix II of CITES, making the trade of this species regulated. The species are categorized as "Near Threatened" in 2001 by the IUCN Red list of Threatened species.

On 5th January, 2013 the landing of juvenile tiger shark was found in the Visakhapatnam fishing harbor. The species was caught in trawl net.

(Reported by Pralaya Ranjan Behera, Scientist, VRC of CMFRI, Visakhapatnam)

Tiger shark, Galeocerdo cuvier

Success in development of seeds of ornamental gastropod under laboratory condition

The snails belonging to the Family Strombidae are economically important worldwide. Success has been achieved for development of technology for seed production under hatchery system in this group especially on *Strombus gigas*. *Lambis* is another major genus of commercial and conservation important animals in India. Of the eleven species represented in India six are listed as endangered.

Status of breeding

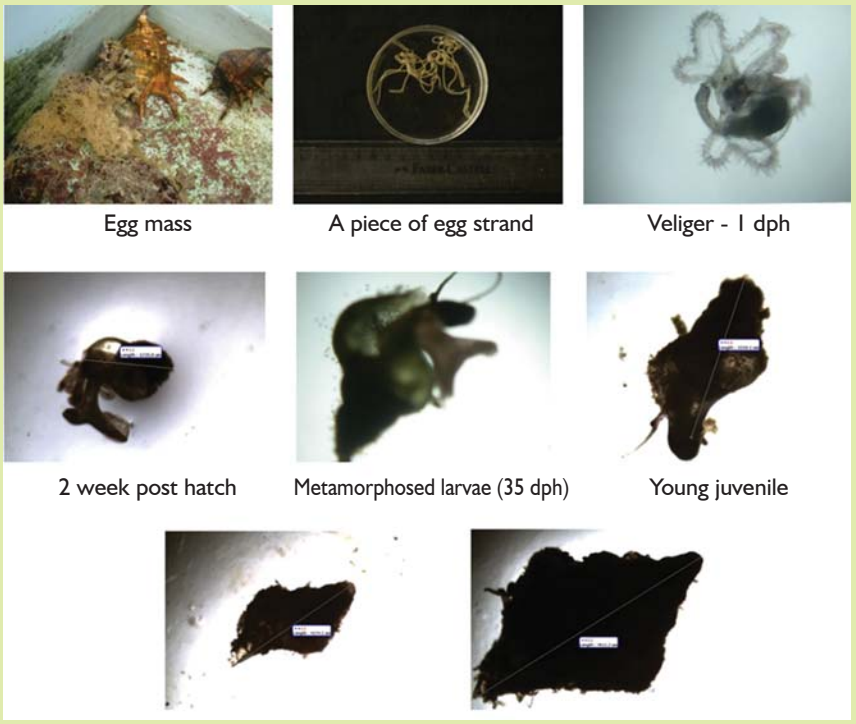
The knowledge on breeding of the Genus *Lambis* is scanty worldwide and available literature reveals that success to the level of maintenance of 7 days post hatch at Marshall Islands is the record.

Breeding success at TRC of CMFRI – 2012-2013

TRC of CMFRI undertook experiments in brood collection and maintenance for captive maturation and spawning.

- A standard protocol has been developed for successful maintenance of brood stock of *Lambis lambis* and captive breeding. Closing of life cycle of the marine gastropods which has planktonic larval phase is considered to be difficult one and limited success has been reported up to 35 days post hatch.
- The experiments continued during 2013 (January) have yielded fruitful results. For the first time in India and elsewhere, the larvae of Common spider conch shells *Lambis lambis* was successfully reared through post settlement and juvenile conch shells were raised.
- The juveniles have crossed 52 dph and surviving well on a diet of macro algae and reached sizes of 5.0-8.0 mm shell length.
- Identification and development of a 'cue' for large scale metamorphosis and settlement of larvae remains a mystery.
- Though the numbers (5) are small, the amount of information obtained and consolidated are fairly large.
- The success may pave way for development of technologies for large scale production of similar forms of gastropods in the near future.

(Reported by I. Jagadis, Tuticorin RC)



Coastal Birds sighted at Visakhapatnam

For constant observation of avian fauna associated with the marine habitats of Visakhapatnam, regular trips (15 surveys) were made for coastal hamlets like Visakhapatnam Harbour, Chintapalli, Nagamayipalem, Pudimadaka, Yarada, Bhimili, Rishikonda, Mangamaripeta, Thotlakonda, Jalaripeta, R.K. Beach. Thirty species of coastal birds were identified and photographed from the surveys conducted in these coastal regions of Visakhapatnam. They were Chinese Pond Heron, Coot, Cormorant, Drongo, Flemingo, Heron, Lesser Sand plover (*Charadrius mongolus*), Egret, Asian Pied Starling, Pariah kite, Brahmi kite, Pied Kingfisher (*Ceryle rudis*), Red-wattled Lapwing (*Vanellus indicus*), Snipe (*Gallinago* sp.), Speckled Wood Pigeon, Small Blue Kingfisher, Whimbrel (*Numenius phaeopus*), White bellied sea eagle (*Halcyon smyrnensis*), White breasted Kingfisher and Yellow Bittern. Flemingo's (*Phoenicopterus* minor) flock consisting around 28 birds were sighted at Bhimili shores.

The sea birds encountered at 30 mt depth was Soft-plumaged Petrel, *Pterodroma mollis* and it was sighted when the Stolephorus catch was the highest.

(Reported by Loveson Edward and Veena, Visakhapatnam RC of CMFRI)

Growth of cobia in the participatory cage farming demonstration at Mandapam

Cobia weighing 2 kgs

Feeding the cobia in the cage

The cobia juveniles which were stocked during September 2012 by M/s Vitality Aquaculture in participatory demonstration mode with Mandapam Regional Centre of CMFRI showed better growth and survival. The survival rate was 92 per cent and the weight ranged from 1.7 to 2.0 kgs. The farming is being continued.

(Reported by G. Gopakumar, A. K. Abdul Nazar, R. Jayakumar, G. Tamilmani, C. Kalidas, P. Ramesh Kumar, Johnson, B. & N. Ramamoorthy, Mandapam Regional Centre)

Small-scale private entrepreneurship on hatchery production of marine ornamental fishes at Mandapam

Based on the hands on training provided by Mandapam Regional Centre of CMFRI a private entrepreneur has developed a small scale hatchery named MAV Breeders and started production of percula clown *Amphiprion percula*. He is maintaining five pairs of *Amphiprion percula* brooders and is able to produce 500-1000 nos. of percula clown in a month. He is selling one inch and 1.5 inch size for ₹ 75 and ₹ 100 respectively. Several batches were produced and marketed by this hatchery.

Entrepreneur feeding the percula clown

Fabrication and Installation of Dismantling type GI Cage at Cochin

The normal 6 m diameter cage was fabricated using B Class 1.5'GI pipes. For easy transportation and manoeuvring it was designed in such a way that the frame can be dismantled into three pieces and reassembled at the site of installation. The pieces thus dismantled are joined by means of GI couplings of 6" length placed inside and bolted. Added to cost-effectiveness this design has the advantage of easy transportation to far off and remote sites where fabrication facilities are not available.

The GI cage was installed at Pooyappilly, Ernakulam. The cage was also stocked with mullets and pearl spot. It is being operated by a youth group of five members from the same locality

(Reported by Imelda Joseph, Mariculture Division)

Dismantling type of GI cage frame

View of sea cage farm at Mundra, Gujarat

CMFRI establishes a Pilot Farm in the outfall channel of the Coastal Gujarat Powers Ltd., Mundra, Kutch District, Gujarat

Following the visit of the Director, CMFRI and the team of scientists during September, 2012 to the Coastal Gujarat Powers Ltd (CGPL), Mundra of the Tata Powers against the invitation of the CGPL authorities for assessing the suitability of extensive outfall channel of the CGPL for sea farming, a pilot scale sea cage farm has been established in the outfall channel of the CGPL, Mundra jointly by the CGPL and the Veravel Regional Centre of CMFRI. A customized sea cage for the running waters of the outfall channel was designed and fabricated by the scientists of the Regional Centre, Veraval. Two square cages of 5m size made of Galvanised Iron pipes of 1.5" size, with base collars and hand rails was fabricated at the site and mounted with the square shape culture nets of suitable size procured.

These cages are deployed in nearly 2km long masonry outfall channel midway from the discharge point of the factory and provided with walkway from the embankments for easy access to the cages. The cage frames and the walkway are kept afloat using sufficient numbers of 200L HDPE barrels mounted on the base collars. The average width of the masonry outfall channel where the cage farm established is 250m and the depth is 4m (average) with a moderately fast (6, 30,000 cub. meter per hour) unidirectional flow of discharge seawater towards the sea. The physico-chemical parameters of water in the channel are all in the ideal range for marine fish farming save the salinity of the water which stood at comparatively elevated levels of 38ppt or above.

The cages have been stocked with 30 numbers of Cobia, *Rachycentron canadum* of average 336g, collected and transported from the multispecies Seacage Farm of the Regional Centre off Veraval during December, 2012. The stock is being fed with low value fishes such as the clupeids, lizardfishes, soles etc collected from the nearby fish landing centres. The water quality and fish growth are being monitored on a bimonthly basis and the initial results of fish growth are encouraging. This will be a first ever effort in India to utilise such water bodies for fish farming. With increased number of thermal and nuclear power plants being commissioned all along the coastal areas to meet the energy needs of the country, it will be appropriate to carry out research on sea farming in these water bodies in collaborations with the concerned corporate bodies and standardise the protocols for farming of various species so as to increase the fish production in the country and provide quality livelihood to the people affected by such developments. As these are perennial running water systems, the opportunities are golden for utilising these for brood stock development and seed production of marine fish and shellfish species.

(Reported by K. Mohammed Koya, Suresh Kumar Mojjada, Sreenath K.R., Gyanaranjan Dash, and Swatipriyanka Sen, Veraval Regional Centre of CMFRI)

Installation of sea cages in the outfall channel of CGPL, Mundra, Gujarat

Innovations in open sea cage farming by Kanyakumari Fishermen

CMFRI has developed and demonstrated sea farming of lobsters in floating cages in open sea conditions in different locations along the entire coast of India in 6 meter diameter HDPE as well as in GI cages. The farming techniques have been taken up by sea farming entrepreneurs and groups of sea farmers. Attracted by the lucrative income and the standardized farming methods, a few farmers along the Kanyakumari and Tirunelveli coasts have devised alterations in the cage model to suit their individual requirements and initiated farming activities. However, they have improvised, designed and developed smaller to medium size cages

Floating conditioning units for maintaining the baby /under-sized lobsters

Baby lobsters inside the unit being conditioned prior to stocking in the floating farming cage

Lobster Farmer inspecting the growth and health status of lobsters reared in his improvised cage at Arokyapuram

Cage designed by a farmer

A smaller holding cage for lobster designed by a farmer from Kadiapatinam village

Dr. Syda Rao inspecting the cages. Dr. Lipton is also seen

and requisite methods and started farming initiatives in different locations.

The impact of open sea cage farming demonstrations by CMFR Institute along the Kanyakumari coast was evaluated. A few of the trained farmers have started culturing lobsters in improvised and modified smaller HDPE floating devices and obtained profits. In Arokyapuram coast, smaller units are being used to condition the lobsters before stocking. Depending on the availability and collections, baby lobsters are stocked inside the rearing unit for two to three days. On an average, about 150 smaller sized lobsters are stoked in the conditioning unit. Cannibalism was not noted.

Innovative cage was designed by a farmer in the shape of boat for rearing lobsters at Manakudi, near Kanyakumari. The cage was coated with polyurethane foam for better durability and floating.

Floating improvised cage for farming of lobsters (Kanyakumari)

(Reported by A. P Lipton, Vizhinjam RC)

Open Sea Cage Farming initiated in two districts of Tamil Nadu

Fabrication of open sea cage for lobster fattening

Site surveys were carried out in Thiruvallur district and Kancheepuram district of Tamil Nadu, and the fishing villages of Arangankuppam and Nettukuppam (Pulicat Lake zone of Thiruvallur district) were selected and Kovlam, Cuddalore Chinnakuppam and Oyyalikuppam (south of Kovalam in Kancheepuram district) were selected for carrying out capture-based cage farming demonstration programmes. Both villages and adjoining creeks were surveyed for water and productivity indices to fix sites for cage installation.

One GI frame cage (1½ " GI pipe / 5 m outer diameter / 4 m inner diameter / 1 m rail height/ 4 m rail ring diameter) has been designed and fabricated for installation in the open sea off Kovalam for lobster fattening in open sea conditions.

Fabrication of inshore water cage for finfish rearing

One GI frame cage (1½ " GI pipe / 3 m outer diameter / 2 m inner diameter / 1 m rail height/ 2 m rail ring diameter) has been designed and fabricated for installation in the identified creek of Pulicat for cage rearing of select available species of finfish.

(Joe K. Kizhakudan, Madras RC of CMFRI)

Demonstration of Open sea cage culture in Raigad district of Maharashtra

Mumbai RC under NAIP Component-3, (World Bank-GEF funded) climate change adaptation project has successfully launched open sea cage (outer dia- 4 mt and inner dia-3 mt) for demonstration at Saswane village in Raigad district of Maharashtra on 12.02.2013 by involving local fishers and released 22 lobsters in first phase. Local fishers are maintaining cage with guidance of CMFRI experts.

(Mumbai Research Centre of CMFRI)

Open sea cage launched at Saswane on 12.02.2013

Lobsters juvenile released in launched cage on 12.02.2013

Mass production of selected Marine Ornamental fishes at Mandapam RC

Juveniles of fire clown

A facility was established at Mandapam RC for mass production of selected marine ornamental fishes. The broodstock development as well as larviculture is practiced in aquarium tanks placed at different tiers in wooden racks. The species which are mass produced include *Amphiprion percula*, *Amphiprion ephippium, Amphiprion frenatus, Premnas biaculeatus, Dascyllus aruanus,* and *Chrysiptera cyanea*. The facility can serve as model to private entrepreneurs for commercial level production of these species.

Aquarium tanks at different tiers in wooden racks

Scaling up of broodstock development of silver pompano at Mandapam RC

The major constraint in the mass scale seed production of silver pompano (*Trachinotus blochii*) was identified to be the scarcity of sufficient numbers of broodstock fish. In order to solve the problem steps were initiated to develop more pairs of broodstocks at Mandapam. The sub adults collected from the wild/juveniles reared in the hatchery were initially grown in the cages. When the fishes have attained about one kilogram size, they were PIT tagged and cannulated to identify the sex and maturity stage. Seven pairs (each pair consisting of three males and one female) were selected from the cage and brought to the hatchery and conditioned in 10 tonne capacity FRP tanks with recirculation facility. The tanks were also provided with hood and photoperiod conditioning system was also installed. The fishes are fed with special broodstock feeds. Periodic cannulations are performed to monitor the maturity and assess the suitability for induction of spawning.

Shri.Anand V. Asnotikar Hon. Minister for Science & Technology and Fisheries, Govt of Karnataka visits Karwar RC

Shri.Anand V. Asnotikar, Minister for Science & Technology and Fisheries, Govt of Karnataka visited the Karwar Research Centre of CMFRI on 2 -2-2013. The minister had a detailed interaction with SIC and Scientists of the centre about the ongoing activities and lauded the staff of the Centre for their effort in making the cage culture of fin fishes in the open sea a reality.

Minister for Fisheries, Govt. of Karnataka, Shri A.V.Asnotikar having discussions with SIC

Training programme on Techniques in Marine Designer Pearl Production at Vizhinjam RC

Inaugural address by Shri. K. Babu, Honourable Minister for Fisheries, Port & Excise

A five day training programme "Techniques in Marine Designer Pearl Production" (19th to 23rd March) was jointly organized by Vizhinjam Research Centre of CMFRI and NFDB, Hyderabad. It was inaugurated at Vizhinjam Research Centre of CMFRI, Vizhinjam on 19th March.

Twenty five (25) participants from different parts of the country participated in the training program. The training programme started with an impressive inaugural function in which Shri. K. Babu, Honorable Minister for Fisheries, Port & Excise, Government of Kerala inaugurated the training by lighting the traditional lamp and also inaugurated the Designer pearl exhibition organized in connection with the training. The function was presided over by Dr. Rani Mary George, Scientist-in-Charge, Vizhinjam Research Centre of CMFRI. Sri. S. Ajayan, Managing Director, Matsyafed released the manual for the training programme by giving a copy to Sri. Chandan Chetri, Senior Executive (Tech), NFDB, Hyderabad. Dr. K. Sunil Mohamed, Head, Molluscan Division, CMFRI, Kochi delivered the keynote address. Officials from Dept. of Fisheries, Port, Harbour and MATSYAFED attended the function. Dr. A.P Lipton, Principal Scientist of the centre delivered vote of thanks. In addition, the function was attended by trainees, fishermen, fish farmers, and other interested general public.


Release of Training Manual by Sri. S. Ajayan, Managing Director, Matsyafed by giving a copy to Sri. Chandan Chetri, Senior Executive (Tech), NFDB, Hyderabad

Training on Mussel and Oyster Culture at Mangalore RC

Mangalore RC of CMFRI organized '*Mussel and Oyster Culture Demonstration/ Training*' jointly with BFFDA, Goa, for Fishermen and Entrepreneurs of South Goa in Sal estuary, December 18, 2012

Training on open sea cage culture for fishermen of Maharashtra, Karnataka and Kerala at Karwar RC

A training programmes on open sea cage culture for the fishermen of Kerala was held at Karwar RC of CMFRI on 10th - 11th January 2013.

A training programmes on open sea cage culture for the fishermen of Karnataka was held at Karwar RC of CMFRI on 15th - 19th January 2013.

A training programmes on open sea cage culture for the fishermen of Maharashtra was held at Karwar RC of CMFRI 4th - 8th February 2013.


Training in progress at Karwar for the fishermen of Kerala


Training in progress at Karwar for the fishermen of Maharashtra

Training programme on Mass production of live feeds and protocols for larviculture of cobia and pompano at Mandapam RC


Dr.M.Karthikeyan, Deputy Director Fisheries, Ramanathapuram, delivering valedictory address


Dr. G. Gopakumar, SIC and faculty with participants

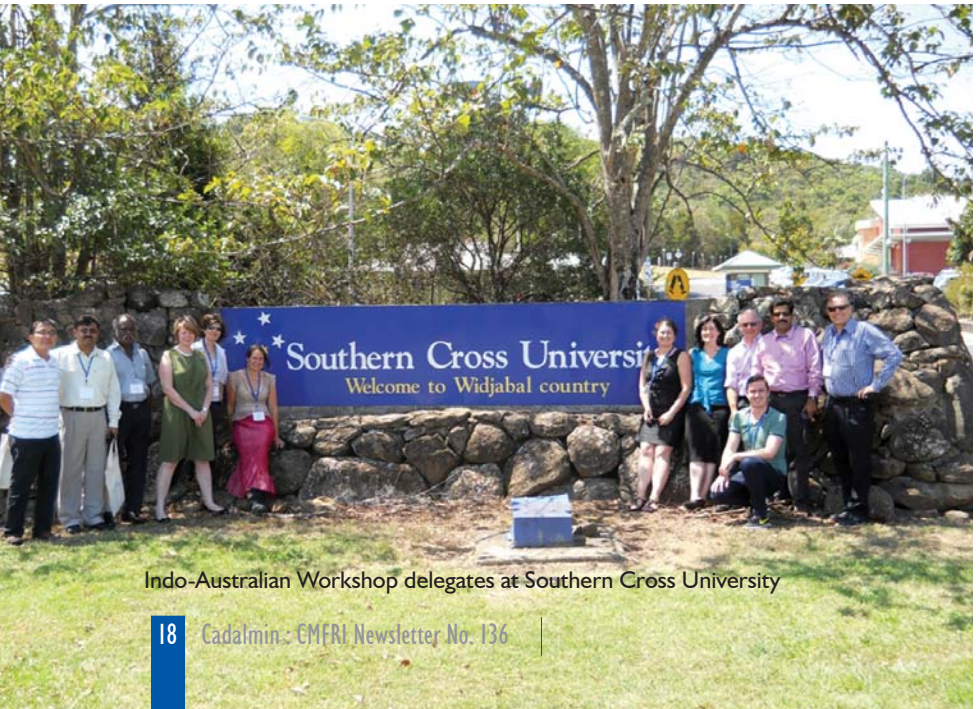
The training programme (NICRA-HRD) on "Mass production of live feeds and protocols for larviculture of cobia and pompano" was organized by Mandapam Regional Centre of CMFRI for the technicians working in fish and prawn hatcheries. The Valedictory function was conducted at the Conference Hall on 21.12.12. Dr. G. Gopakumar, Scientist-in-Charge & Head, Mariculture division, CMFRI, Mandapam, delivered the presidential address. Dr. I. Rajendran, Senior Scientist delivered the welcome address. Dr. A. K. Abdul Nazar, Senior Scientist proposed a vote of thanks. Dr. M. Karthikeyan, Deputy Director of Fisheries (Regional), Ramanathapuram was the Chief Guest. He delivered the Valedictory address and distributed the certificates to the participants.

Workshop

Indo-Australian joint workshop on Marine Bioprospecting

Indo-Australian joint workshop on Strategic Development of Natural Medicines from Muricidae Molluscs under Indo-Australian Biotechnology Fund – Round 6: Nutraceuticals and Functional Foods funded by Department of Biotechnology, Govt. of India was held at Southern Cross University on 5-6th November at the National Marine Science Centre, Coffs Harbour and from 7-9th November at the main campus in Lismore, NSW.

The Indian delegation led by Dr. K. K. Vijayan, Head, Marine Biotechnology Division, Central Marine Fisheries Research Institute, and the Australian delegation was led by Dr Kirsten Benkendorff, Senior Lecturer, Southern Cross University, Australia. Post workshop activities for the Indian delegation were undertaken at the Bribie Island Research Centre, Queensland, facilitated by Dr. Peter Lee, QLD Dept. Agriculture, Fisheries and Forestry, as well as the Sydney Institute of Marine Science, facilitated by Prof Peter Steinberg, University of NSW. The main workshop at Southern Cross University was attended by 19 participants including Dr. K. K. Vijayan, Dr. I. Jagadis, and Dr. Kajal Chakraborty from the Central Marine Fisheries Research Institute, Flinders University and Southern Cross University. Additional invited speakers included Dr Giji Zacharia from the Government Homeopathic Hospital in Ernakulam, Kerala, Mr Ben Smith, Research Director of Australian Bight Abalone and Mr Ben Phillips, Director of Protected Areas Policy and Biodiscovery Parks Australia, Commonwealth Government. The workshop incorporated three facilities tours, 16 oral presentations, two laboratory demonstrations and significant interactive discussions.



Indo-Australian Workshop delegates at Southern Cross University

The post workshop tour and discussions by the Indian delegation were done at Bribie Island Research Centre, Brisbane, Queensland and Sydney Institute of Marine Science, University of NSW, Sydney. This workshop enabled significant knowledge sharing and strategic

Workshop presentation under progress

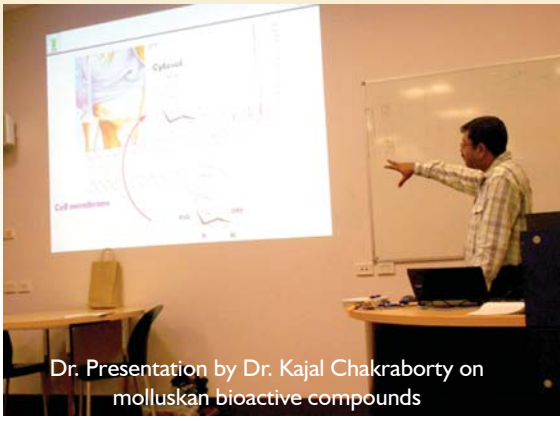
planning for future research. The main outcome includes an agreed strategy for future collaboration and project governance. The workshop also attracted significant media interest, including interviews for Channel 7 news, NBN local news, ABC regional radio Goldcoast and Coffs Harbor, and local newpapers (e.g. Coffs Coast Advocate).

Presentation by Dr. I. Jagadis on Muricidae diversity in India

This workshop on Strategic Development of Natural Medicines from Muricidae Molluscs focussed on the biological activity of Muricidae natural products in India and Australia, through collaboration with CMFRI's Marine Biotechnology Division with Southern Cross Plant Sciences Medicinal Plant Research groups' expertise in preclinical and clinical testing of natural medicines. The workshop plan considered the comparison of the chemical composition of the commercially available *Murex* tincture and optimised extracts from local Muricidae species, procedures for clinically testing the Murex nutraceutical in double blind randomised trials, the requirements for Therapeutic Goods Administration approval of the new Muricidae nutraceutical; and a sustainable local supply of Muricidae natural medicines from Indian and Australian species.

Presentation by Dr. K. K. Vijayan at Southern Cross University, Australia

A plan to extend the workshop as Indo-Australian research project will be undertaken that has a high chance of generating a new nutraceutical of commercial value because it focuses on a natural medicine with a precedent for use in India, from species that are currently under-valued. This workshop developed a strategic research proposal to chemically analyse the commercially available *Murex* tincture and progress the development of an optimized and scientifically substantiated nutraceutical from Muricidae molluscs through rigorous preclinical and clinical trials.



Dr. Presentation by Dr. Kajal Chakraborty on molluskan bioactive compounds

Dr. R. Sathiadhas appointed as member of QRT for CIFRI

Dr. R. Sathiadhas, Principal Scientist, Vizhinjam Research Centre and Former Head of Socio-Economic Evaluation and Technology Transfer Division (SEETTD) of CMFRI was appointed as member of the Quinquennial Review Team (QRT) 2007-2012 for Central Inland Fisheries Research Institute (CIFRI) by ICAR. He attended the first review meeting at CIFRI, headquarters, Barrackpore, Kolkata during 31-01-2013 to 03-02-2013 and second review meeting at Bangalore Research Centre of CIFRI, Hassarghatta during 28-02-2013 to 04-03-2013.

Commissioning of Environmental Chamber by Dr. Syda Rao, Director, CMFRI at Mandapam on 4th March 2013

Cutting the ribbon by Dr.G.Syda Rao, Director, CMFRI

Climate change is projected to impact broadly across ecosystems, societies and economies increasing pressure on all livelihoods, food supplies including those in fisheries and aquaculture sector. It is projected that our planet might be heated up by 1.1° C during this century and increase could be up to 3° C. All cultured aquatic animal species for human consumption are poikilothermic (metabolism entirely dependent on the environmental parameters). Consequently, any increase and/or decrease of the temperature of the habitats would have a significant influence on general metabolism, rate of growth, reproduction and therefore total production. In the projected scenario of climate change when the sea temperature is expected to rise, the availability of the species which cannot adapt to the same will decline, resulting in the poor catch of those species. Hence scarcity of catch of many species which are contributing to the marine fish production in the country can be anticipated.

View of environmental main chamber

An adaptive measure to increase marine fish production is to find out species which are climate resilient and to develop seed production and farming technologies for the species, so that production through aquaculture of the species can compensate the scarcity of fish caused by climate change. In this context, investigation is needed under controlled conditions to find out the climate resilience of suitable species and to select the same as candidate species for farming in future.

The environmental chamber is a facility to conduct such experiments to select suitable species. The adaptability of the species to environmental changes, brood stock development, spawning, fingerling production, survival and growth will be investigated with this unique facility which is sanctioned with the budget of one crore under the National Initiative on Climate Resilient Agriculture (NICRA Project) of ICAR. The selection of suitable climate resilient species and the development of breeding, seed production and farming techniques for the species will pave the way for commercial level aquaculture of the species and can lead to increased fish production. Hence the commissioning of the environmental chamber which is first of its kind in the fisheries research scenario of India is a milestone to ensure sustainability of sea food production in future.

The Environmental Chamber was commissioned by Dr.G.Syda Rao, Director, CMFRI on 4th March 2013 in presence of Dr.G.Gopakumar, Scientist-in-Charge & Head, Mariculture Division.

Contact Science Motivation programme at Mandapam RC

Yadava College, Madurai in collaboration with CMFRI organized the contact science motivation programme at Mandapam Regional Centre during 21st to 30th January 2013. The programme was inaugurated by Dr.G.Gopakumar, Scientist-in-Charge in 21st January 2013. Totally 60 students from different schools in Ramanathapuram district participated the programme. Scientists from Mandapam Regional Centre of CMFRI interacted with the students and motivated them to take science as their career. Experts from all over the India delivered talks on different topics. Mandapam Regional Centre of CMFRI organized a quiz competition for the students on 29th January 2013. The valedictory function was on 30th January 2013. The valedictory address was delivered by Dr.G.Gopakumar, Scientist-in-Charge and he distributed the certificates to the students.

Dr.G.Gopakumar, Scientist-in-Charge delivering inaugural address

Scientists interacting with students

Dr.G.Gopakumar, Scientist-in-Charge distributing certificates to the students

Talk by Maya Sivakumar, Regional Officer, United States-India Educational Foundation on FULBRIGHT Fellowships available for research programmes was arranged at the Conference cum Library Hall of the Mangalore Research Centre on March 1, 2013.

Science day celebration at Mumbai RC

Mumbai Research centre of CMFRI, Mumbai organized a one day series of lectures on "Dimensions in fisheries science" on the occasion of National Science Day (NSD) on 2nd March 2013 with objectives to enrich the knowledge of technical as well as scientific fraternity. On these occasions, presentations on marine fisheries and related topics were made by scholars, contractual and technical staff of the Research Centre.

A lecture series "Dimensions in fisheries science" on occasion of Science day celebration at CMFRI, Mumbai Research Centre on 2nd March 2013

Women's Day celebrations

Dr. G. Syda Rao presenting a memento to Dr (Mrs.) Geetha Suraj

Dr.V.V. Lakshmi, Asst.Salt Commissioner, Chief Guest of women's day celebration at Tuticorin RC

Rangoli competition on women's day at Madras RC of CMFRI

As a part of Women's Day observation, the Women's Cell, CMFRI organized a special talk on "Women and Society" by Dr (Mrs.) Geetha Suraj, Principal (Retd.), S.N.M. College, Maliyankara on 8th March, 2013 at CMFRI Cochin. The talk touched upon the women in various strata of the society giving a clear picture of their present day life and prompted practical suggestions for improvement as well as self- retrospection. Dr. G. Syda Rao, Director CMFRI, presided over the function.

The Women's Day was celebrated on 08.03.2013 at the "Shore Hall" of Tuticorin RC of CMFRI. Dr. V. V. Lakshmi, Asst. Salt Commissioner, Tuticorin Salt Department, Tuticorin was the Chief guest for the function.

The Women's Cell of CMFRI and KVK, CMFRI had jointly organized a training programme on various aspects of "Kitchen Gardening" on 2nd March, 2013 at Thevara Campus of KVK, CMFRI. Selected items of organic agro products and planting materials were supplied to the participants. The programme had benefitted around 80 participants consisting of CMFRI, CIFRI and NBFGR staff members, their family, students and retired staff of CMFRI.

Dr. Shinoj Subramannian, Programme coordinator, KVK adressing the participants

CMFRI bags Rajarshi Tandon Award

CMFRI bagged the Rajarshi Tandon Award under Rajarshi Tandon Award Scheme for the year 2011 for the outstanding Official Language implementation activities among the Institutes situated in Region C. In the Directors' Conference held at NASC Complex, New Delhi on 19th March 2013 Director, CMFRI, Dr. G. Syda Rao received the award.

Dr. G. Syda Rao, Director receiving the Rajarshi Tandon Award from Dr. M. S. Swaminathan. Dr. S. Ayyappan is also seen

Kochi TOLIC Joint Hindi Week Celebrations

The Joint Hindi Week celebrations 2012 of Kochi Town Official Language Implementation Committee was organized under the auspices CMFRI from 21 to 25 February, 2013. On this occasion Participants of member organizations attended in various competitions. The following officers of CMFRI won in various events.

Dr. Imelda Joseph, Principal Scientist
Dr. Grinson George, Senior Scientist — I[st] Prize in Quiz competition

Shri A. T. Sunil, UDC - Ist Prize in Light music

Dr. J. Jayasankar, Principal Scientist - IInd Prize in Cross word puzzle

Smt. Bindu Sanjeev, Personal Assistant - IIIrd Prize in News reading

Chief Administrative Officer and staff of CMFRI receiving Trophy from the Income Tax Commissioner Shri V.K. Misra, IRS for the outstanding participation in TOLIC activities

CMFRI also bagged trophy for overall performance and scoring highest points.

Condensed Translation Training Course

Under the quinquennial programme of encouraging the proficient Hindi users of the Institute and to promote the functional use of Hindi a 5 day Condensed Translation Training Course was conducted at CMFRI Headquarters from 04 - 08 March, 2013 with the faculty support of Central Translation Bureau, Ministry of Home Affairs. Shri Ishwar Chandra Misra, Assistant Director, Central Translation Bureau, Bangalore and Dr. Sathyendra Singh, Assistant Director, Central Translation Bureau, New Delhi provided faculty guidance. In the classes subjects such as Official Language Policy, Translation process, Principles of Translation, Translation and structural aspects, Scientific and Technical Translation, translation in correspondence, Technical terminology, structure and concept of Administrative language and Functional Hindi were dealt with. Total 23 scientists and officers attended the training.

In the valedictory function held on 08.03.2013 Dr. G.Syda Rao, Director, CMFRI distributed certificates to the participants.

Inauguration by Shri Rakesh Kumar, Chief Administrative Officer, CMFRI

Participants and faculty of Translation Training Course with Dr. G. Syda Rao Director, CMFRI

Director, CMFRI distributing the certificates

Foundation Day of CMFRI was celebrated at Headquarters and all Regional/ Research Centres on 5-02-2013. An open house was arranged on the day

At headquarters



Students visiting museum and laboratories at Headquarters

At Mandapam Regional Centre of CMFRI

As a part of Foundation Day programme, fishermen interaction meeting was organized at Mandapam Regional Centre of CMFRI on 4th February 2013. Ten each of fishermen and fisherwomen of Olaikuda village, Ramanathapuram district and three fishermen from Puducherry actively participated the meeting. The interaction was led by Dr.G.Gopakumar, Scientist-in-Charge and all scientists of Mandapam Regional Centre participated the meeting. Dr.G.Gopakumar shared the knowledge about artisanal type of sea cage farming with cobia and pompano. Fishermen expressed that there is drastic reduction of fishery resources in the last five years. They felt that it is high time for them to find suitable alternate options, for which they have approached Mandapam Regional Centre to gain knowledge about small scale sea cage farming. They also expressed the difficulty in getting wild collected seeds; hence they expressed the need of seeds from Mandapam Regional Centre. Dr.G.Gopakumar, Scientist-in-Charge mentioned that few artisanal cages and seeds can be provided initially and later they have to take it up on their own. Fishermen expressed their happiness and assured that they will take up cage farming and they felt that this will be the best alternative for the fisherfolk to earn additional income.

Dr.G.Gopakumar, Scientist-in-Charge leading the interaction

Fishermen raising their queries

Visit of aquarium and museum by school and college students

From the schools and colleges of Ramanathapuram district around 1500 students visited the aquarium and museum of Mandapam Regional centre of CMFRI on 4th February 2013.

School children visiting the Museum

Students viewing the cage farm

College students visiting the Aquarium

Dr.G.Gopakumar, Scientist-in-Charge along with school students

At Visakhapatnam RC

An exhibition was conducted at the Centre premise with different marine fishes. Students from different schools visited the centre and they were explained with the activities of the centre.

Students visiting the laboratories of Visakhapatnam RC

At Mumbai RC

Foundation Day celebration and an "Open House" were organized on 5th February, 2013 at Mumbai RC of CMFRI. On this occasion 66 students and 4 professors from University of Mumbai participated actively in the "Open House". The inaugural address and opening remarks by Scientist-In-Charge, Dr. V.D. Deshmukh were followed by a speech overview of marine fisheries of Maharashtra. Later, Dr. V. V. Singh, Principal scientist, Mumbai RC gave an account on m KRISHI® and stated the importance of GEF (Global Environmental facility) grant project. The programme continued with lectures on "Climate change and marine fisheries", "Sea cage farming", and Demersal fisheries resources of Maharashtra by scientific and technical staff of the centre. Afternoon session was exclusively dedicated to identification of fish and prawn. species along Mumbai coast.

Foundation day celebration of CMFRI at Mumbai Research centre

Visit of Mumbai University students on occasion of foundation day of CMFRI

At Mangalore RC

The Foundation Day of CMFRI was celebrated with great fervour and gaiety on 04-02-2013. In connection with the celebrations, an open house was arranged. Students from different Schools and Colleges and Faculty visited the Research Centre. Mandate of CMFRI and the multi-disciplinary research activities taken up at the Research Centre was explained.

Students visiting laboratories of Manglore RC

At Madras RC

School students participation in open Day events at Kovalam Field Laboratory on 4th February, 2013

At Tuticorin RC

Shri.S.Natarajan, Chairman, VOC Port Trust, Tuticorin declares open the "Open House Celebration"

Prize distribution by the Chief Guest to winners of the competition

An Open House 2013 was conducted at TRC of CMFRI, Tuticorin on 04.02.2013 & 05.02.2013. The' Open House' was inaugurated by Shri. S. Natarajan, Chairman, VOC Port Trust, Tuticorin, along with Scientist in Charge, TRC of CMFRI, Tuticorin.

Mumbai RC participates in "Global Konkan Festival (GKF) -2013"

Mumbai Research Centre participated in 4 days exhibition "Global Konkan Festival-2013", at NESCO comples (Bombay Exhibition Centre) Grounds, Off Western Express highway, Goregoan East, Mumbai-400063 from 4.01.2013 to 7.01.2013.

Hon. Union Agriculture Minister Shri. Sharad Pawar visiting MRC of CMFRI, Mumbai stall at "Global Kokan Festival- 2013"

Mumbai RC team demonstrating portable open sea cage model to the visitors during GKF 2013

Hon'ble Central & State Ministers with MLAs visiting CMFRI pavilion of Kerala Agri. Food Pro Meet at Kochi

Dr. E.G. Silas, Former Director, CMFRI & Former VC, KAU and Ms. Leena Nair IAS, Chairperson, MPEDA visiting CMFRI pavilion of Aqua Aquaria 2013 at Vijayawada

Madras RC organised CMFRI Stall at the Science exhibition held at the Chennai Science Festival, 2013 from 29.01.13 to 03.02.13

Dr.Veerendra Veer Singh, Principal Scientist, honored at "Global Kokan Festival-2013"

VRC of CMFRI and SEETTD Division, Kochi Participated in the National Biodiversity Expo at Kanakakunnu palace from 21-12-2012 to 30-12-2012 organised by Kerala State Biodiversity Board and won best pavilion prize.

Shri. V. Edwin Joseph,
Officer-in-Charge,
Library and Documentation Centre
receiving memento from
Dr. A. K. Kumaraguru,
Vice Chancellor,
Manonmaniam Sundaranar University,
Tirunelveli, Tamil Nadu for establishing
Open Access Institutional Repository
in India in a function held at the
Conference hall of the
MS University on 14-3-2013

Sports News

CMFRI Won Overall Runners Up in ICAR South zone tournament

The CMFRI sports contingent comprising of 36 staff under the leadership of Dr. Shyam S. Salim, Senior Scientist and Chief-de- mission and Mr. K. P. John as the Manager participated in the ICAR South Zonal tournament held at SBI Coimbatore during 18-22 February 2013 and emerged as the overall runners up with a tally of 66 points. Mr. A. K. Shaji, bagged the Individual Athletic champion.

CMFRI team

CMFRI team receiving the runners up trophy from Ms. E. S. Uma, Suprintendent of Police (Rural), Coimbatore

Mr. A. K. Shaji receiving the trophy for best athlet from Ms. E. S. Uma, Suprintendent of Police (Rural), Coimbatore

The list of winners are given below.

A. Athletics:

Mr. A. K. Shaji, CMFRI Cochin - Individual Athletic champion:

(First Place in High Jump, Javelin Throw and Second Place in Shot-put and Discus Throw)

Mr. P. Rajendran, CMFRI Mandapam - First Place in 800 m and Second place in 100 m and Third place in Long jump

Mr Shoji Joy Edison, KVK Narakkal- 400 m, Javelin Throw - Third Place

Mrs K. P. Salini, CMFRI Cochin- 200m women – Third Place

Mr. P. Rajendran, Mr. Shoji Joy Edison, Mr. V. Rajendran, Mr. James - Relay 4X 100 m - Third Place

B. Games – Individual Events

Mr. Harrris K., CMFRI Karwar - Chess – First Place

Mr. K. G. Jayaprasad, CMFRI Cochin - Cycle Race- Second Place

C.Games- Team Events

(i)Winners: Basket Ball

Mr. Shoji Joy Edison, Dr. Grinson George Mr. Joseph Mathew, Mr. K. G. Jayaprasad, Mr. V. Rajendran Mr. A. K. Shaji, Mr. Jerald Raja K., Dr. Shyam S. Salim

(ii) Winners: Shuttle Badminton

Mr. C. Jayakanthan, Mr. Ramkumar, Mr. V. Rajendran, Mr. A. K. Shaji, Dr. Shyam S. Salim

(iii) Winners : Volleyball (Smashing)

Mr. Jerald Raja K., Dr. Satyanarayana Sethi, Mr. A. K. Shaji, Mr. P. Rajendran, Mr. Mendon Xavier, Mr. Abhilash P. R., Mr. David Babu, Mr. Sekar V. Rayer, Sumesh

Sports conducted at Mandapam RC

As a part of Foundation day Celebration the Recreation Club organized the sports events at Mandapam Regional centre of CMFRI on 4th February 2013. Dr. G. Gopakumar, Scientist-in-Charge inaugurated the sports event and volly ball match was conducted.

Dr. G. Gopakumar, Scientist-in-Charge congratulating the players

Popularisation cage culture in abandoned granite quarries

There are more than 700 granite quarries in Ernakulam district, many of them are abandoned. Such quarries are good fresh water resources with depth ranging from 4 m to 25 m. Though these water reservoirs are suitable for fish farming, most of them are unused due to the difficulty in harvesting fish from these deep water sources. KVK has successfully implemented a programme to resolve this issue. Small floating cages were designed and demonstrated for farming in large granite quarries at Kothamangalam. Pearlspot was selected as the candidate fish. This programme is receiving widespread acceptance among farmers in the eastern parts of the district.

Dr. G. Syda Rao, Director visiting the cage culture site in granite quarries

Conservation of indigenous cattle breeds of Ernakulam district

An awareness campaign on Conservation of Indigenous cattle breeds was conducted in Kuttampuzha Grama Panchayat near Kothamangalam. The programme was inaugurated by Sri. C. J. Eldhose, President, Kuttampuzha Grama Panachayat and attended by local body members and farmers. KVK experts Dr. K. Smita Sivadasan SMS (AH) and Shri. F. Pushparaj Anjelo, SMS (Agril Extn) explained the importance of indigenous cattle breeds, their identification from crossbred cattle and the need for their conservation.

Demonstration of precision farming at Thevara campus

The precision farming unit at KVK, Thevara Campus

KVK set up an open precision farming visit at Thevara campus to demonstrate the technology to farmers. Precision farming is an integrated approach wherein the inputs viz., water, fertilizer and pesticides are applied in a controlled manner. Hence soil test based fertilizer recommendation was done. The fertilizer was applied directly to the root zone through drip irrigation system so that wastage was minimized. The measured quantity of liquid fertilizers was mixed with irrigation water by using a venturi system. The crop specific production algorithm was prepared and the input application schedule followed accordingly. Cabbage, cauliflower, brinjal, amaranthus. Bhindi, Cowpea and chilly were grown under precision farming mode.

Soil fertility map of Ernakulam district

KVK has prepared soil fertility map of Ernakulam district wherein all the macro nutrient viz., Nitrogen (N), Phospherous (P) and Potassium(K) status of soils in all the panchayaths, municipalities and corporation was documented. The nutrient status was classified into low, medium and high. This will facilitate farmers, agriculture officials and policy makers to understand the general fertility status of each region without analyzing the soil. Accordingly region specific general fertilizer recommendations can be made. In addition certain crops can be recommended to particular regions to improve the fertility status in deficient area. For e.g., pulse crops can be recommended to improve the Nitrogen status in deficient area to improve the nitrogen fertility.

Popularisation of cage layer poultry for urban households

In order to promote production of organic eggs in households in Kochi Corporation area, KVK popularized cage rearing of Athulya poultry. Each unit comprising of 5 birds and a cage costing INR 3500/- were distributed free of cost to the urban housewives and regularly monitored the performance, acceptability and spread of the technology. The unit is getting wide popularity among urban house wives. The factors which popularized this programme are less space requirement and high rate of egg production, i.e 1500 eggs per year from the unit. In order to ensure supply of organic feed to these units, KVK has formulated an organic layer poultry feed and marketed under the brand name CADALMIN™.

Athulya layer poultry in cage for Urban house holds

Dr. G. Syda Rao, Director

- Attended the 38th meeting of the Board of Management at CIFE, Mumbai on 2nd January 2013.
- Attended the RFD meeting of Fisheries Division to finalize the draft RFD for 2013-14 at ICAR, New Delhi on 9th January 2013.
- Attended the 2nd meeting of the 12th IJSC meeting at Mangalore on 29th January, 2013.
- Attended the Pillay Aquaculture Foundation Congress on Public-Private Partnership in Aquaculture and Culture-based Fisheries-2013 at Barrackpore, Kolkata on 9th February 2013 and presented a paper on "the need for strong support of PPPs for new initiatives in mariculture in India, including open sea cage culture".
- Attended 226th Meeting of the Governing Body of ICAR Society at NASC Complex, Pusa, New Delhi on 14th February 2013.
- Attended 84th Annual General Meeting of the ICAR Society at NASC Complex, Pusa, New Delhi on 18th February 2013.

Dr. (Mrs.) V. Kripa attended meeting with District Collector, Alappuzha as member of Expert Committee constituted to study permanent opening of Andhakararanezhi shutter

Dr. P. U. Zacharia, Head, DFD attend the National Task Force (NTF) of the Bay of Bengal Large Marine Ecosystem (BOBLME) Project at Visakhapatnam on 21.12.2012.

- Participated in the Pre-SAP Consultative meeting of BOBLME at Pondicherry on 21st January 2013.

Dr. T.V. Sathianandan and Dr. J. Jayasankar Attended 10th Meeting of the Technical Monitoring Committee for the central sector scheme "Strengthening of Database and GIS for Fisheries Sector" of the Department of Animal Husbandry Dairing and Fisheries, Ministry of Agriculture, New Delhi held at Bhubaneswar on 29-01-2013.

Dr. R. Narayanakumar, Head SEETTD attended the Directors of Fisheires Research Institutes and RFD Nodel Officers meeting at New Delhi on 19.01.13.

Dr. Vinay D. Deshmukh, Principal Scientist & Scientist-in-Charge attended 14th Consultative committee meeting of Fishery Survey of India (FSI) Botawala Chambers, Sir P.M. Road, Mumbai on 11th March 2013.

Dr. G. Maheswarudu Principal Scientist & SIC Participated in the 8th Aquatech Expo -2013 at Eluru, held on 7th and 8th January, 2013.

- Attended as a resource person, one day programme on "Recent Trends in Aquaculture" on 6th March, 2013 at Fisheries Research Station, Sri Venkateswara Vetenary University, Kakinada, Andhra Pradesh.

Dr.K.K.Philipose, Scientist-in-charge and **Dr. S.R. Krupesha Sharma**, Senior Scientist attended a cage culture review meeting at the College of Fisheries, Ratnagiri on 19-1-2013.

Dr. Vinod. K, Principal scientist and SIC participated training on "Advanced Techno Management Programme" at ASCI, Hyderabad during 25.2.2013 to 29.3.201

Dr. P. K. Asokan, Principal Scientist., attend a meeting under the UNDP collaborative project on Mussel mariculture at Ratnagiri- Sinddurg Dist on 2-2-2013.

Dr. Prathibha Rohit, Principal Scientist attended the Board of Research in Nuclear Sciences (BRNS) as an Expert Faculty of the Review Committee to help in assessing the progress of the projects pertaining to marine fisheries. February 14, 2013 at BARC, Mumbai.

- Attended Regional Workshop on 'Fisheries in Areas Beyond National Jurisdiction (ABNJ): Realising Sustainable Benefits through Appropriate Regional Fisheries Management' organized by the Bay of Bengal Programme Inter-Governmental Organization in Collaboration with the World Bank, March 4-5, 2013.
- Attended the Third User Interaction Workshop at INCOIS Hyderabad. March 8, 2013.

Dr. J. Jayasankar, Principal Scientist, attended as a resource person during the workshop entitled 'Biometrical Analysis using SAS' at IGKV Raipur, Chhattisgarh, from 23rd January to 25th Janunary 2013.

- Attended interaction meeting with Oceanography Group of NRSC, Hyderabad on 1st February, 2013.
- As a resource person at the IASRI, New Delhi sponsored NAIP consortium training programme on "Strengthening of Statistical Computing for NARS" held at SwamyKeshavanand Rajasthan Agricultural University, Bikaner, Rajasthan on 6th March, 2013.
- Participated and delivered an invited lecture entitled "GIS applications in Marine Resource Management" at the Workshop on GIS applications in Natural Resource Management, held under the aegis of NAARM, Hyderabad from 19thFebruary, 2013 to 22nd February 2013
- Served as a resource person at the training programme entitled "SAS for data reduction and Multivariate Analysis" conducted by CIFE, Mumbai on 14th February 2013.
- Attended the second meeting to work out the fleet plan for oceanic and deep sea resources of Indian EEZ held on 19/03/2013 under the aegis of DADF, New Delhi at BoBP, Chennai.

Dr. M. Sivadas, Sr. Scientist attended the National strategic workshop on small scale fisheries, India at Chennai on 01.01.2013 & 11.01.2013 organized by BOBP.

Dr. I. Rajendran, Senior Scientist and **Dr. Kajal Chackroborthy,** Scientst participated ICAR Chemists' Conclave at Division of Agricultural Chemicals, IARI, New Delhi during 14-15 January, 2013.

Dr. S. Lakshmi Pillai, Senior Scientist attended the Training workshop on Taxonomy of Brachyuran crabs at the Department of Aquatic Biology and Fisheries, University of Kerala during 9-11 January 2013 at Trivandrum.

Dr. Shoba Joe Kizhakudan, Scientist (SS) Participated (as resource person) in the Fifth Regional Training Programme on Code of conduct for Responsible Fisheries (RTC-CCRF) organized by the Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO) from 19 January - 02 February 2013 and delivered a lecture on "Data processing and its application in Fisheries Management".

K. Mohammed Koya, Scientist and Scientist-in-Charge, Regional Centre of CMFRI, Veraval attended the 5TH Scientific Advisory Committee Meeting of the Krishi Vigyan Kendra, Kodinar, Junagadh on 22nd February, 2013.

Dr. V. Srinivasa Raghavan, Scientist attended National workshop on "Foresight and future pathways of Agricultural research through youth in India at NASC complex, New Delhi during March 1 to 2, 2013

Dr. Johnson, B Scientist participated awareness programme in small scale mariculture for fishermen club at Olaikuda village, Ramanathapuram district on 19th January 2013.

Shri.L. Ranjith, Scientist attended the training program on "SAS for Data Reduction and Multivariate Analysis" at CIFE, Mumbai during the period from 11.02.2013 to 16.02.2013.

Shri. V. Edwin Joseph Officer-in-charge, Library and Documentation Centre attended a workshop on Digital Libraries using Dspace at Manonmanian Sundaranar University, Tirunelveli, Tamil Nadu as a resource person on 14.03.2013.

Shri. Mahendra D. Fofandi, T-6 (Tech. officer) attended a workshop on "Cage Culture-A New Direction" organized by the College of Fisheries, Ratnagiri on 24-1-2013 at Dapoli, Maharashtra. He gave a lecture on 'Prospects of open sea cage farming' during the occasion. Around 200 fishermen participated in the workshop.

Personnel

We salute the seniors on their retirement

Smt. D .Geetha
Administrative Officer
CMFRI Hqrs.
31.01.2013

Shri. M. Balaraman
Assistant
CMFRI Hqrs.
31.01.2013

Shri. S. Rajapackiam
T-6 (Technical Officer)
Madras RC
31.01.2013

Shri. J Narayana Swamy
T-5(Technical Officer)
CMFRI Hqrs.
31.01.2013

Shri. S. Sankaralingam
T-5 (Technical Officer)
Madras RC
31.01.2013

Dr. Smt. Geetha Antony
T-9 (Technical Officer)
CMFRI Hqrs.
31.03.2013

Shri. N. Vaithianathan
T-5 (Technical Officer)
CMFRI Hqrs.
31.03.2013

MEETING

2nd meeting of the Institute Staff Joint Council of CMFRI held on 29th January 2013 at Mangalore Research Centre of CMFRI.

Academic News

Mr. HashimManjeybrayakath, Research Scholar, Pelagic Fisheries Division was awarded doctoral degree by the Cochin University of Science and Technology for his thesis entitled "Distribution, diversity and biology of the deep-sea fishes in the Indian EEZ" under the guidance of Dr. N.G.K.Pillai, Emeritus Scientist, CMFRI.

PROMOTIONS

Names & Designation	Promoted as	Center	w.e.f
Dr. T.V. Sathianandan, Senior Scientist	Principal Scientist	CMFRI Hqrs.	01.01.2009
Dr. P.U. Zacharia, Senior Scientist	Principal Scientist	CMFRI Hqrs.	01.01.2009
Dr. (Smt.) Imelda Joseph, Senior Scientist	Principal Scientist	CMFRI Hqrs.	01.01.2009
Dr. K.K. Joshi, Senior Scientist	Principal Scientist	CMFRI Hqrs.	01.01.2009
Dr. (Smt.) Josileen Jose, Senior Scientist	Principal Scientist	CMFRI Hqrs.	01.01.2009
Dr. E.M. Abdussamad, Senior Scientist	Principal Scientist	CMFRI Hqrs.	01.01.2009
Dr. PrathibhaRohit, Senior Scientist	Principal Scientist	Mangalore RC	01.01.2009
Dr. P.K. Asokan, Senior Scientist	Principal Scientist	Calicut RC	01.01.2009
Dr.(Smt.) P. Laxmilatha, Senior Scientist	Principal Scientist	Visakhapatnam RC	01.01.2009
Dr.(Smt.) K.S. Sobhana, Senior Scientist	Principal Scientist	CMFRI Hqrs.	25.07.2009
Dr. K.K. Philipose, Senior Scientist	Principal Scientist	Karwar RC	12.08.2009
Dr. K. Madhu, Senior Scientist	Principal Scientist	CMFRI Hqrs.	03.04.2010
Dr. A.P. Dineshbabu, Senior Scientist	Principal Scientist	Mangalore RC	14.09.2010
Dr. J. Jayasankar, Senior Scientist	Principal Scientist	CMFRI Hqrs.	27.12.2010
Dr. P.P. Manojkumar, Senior Scientist	Principal Scientist	Calicut RC	21.01.2011
Dr. (sSmt.) Shoji Joseph, Senior Scientist	Principal Scientist	CMFRI Hqrs.	21.06.2011
Dr. (Smt.) RemaMadhu, Senior Scientist	Principal Scientist	CMFRI Hqrs.	14.02.2011
Dr. M.K. Anil, Senior Scientist	Principal Scientist	Vizhinjam RC	05.07.2011
Dr. I.Jagadis, Senior Scientist	Principal Scientist	Tuticorin RC	25.07.2011
Dr. Boby Ignatius, Senior Scientist	Principal Scientist	CMFRI Hqrs.	03.11.2011
Dr. K. Vinod, Senior Scientist	Principal Scientist	Madras RC	05.02.2012
Dr. (Smt.) A. Margaret MuthuRathinam, Senior Scientist	Principal Scientist	Madras RC	12.02.2013
Dr. (Smt.) Asha P. S.	Principal Scientist	Tuticorin RC	21.03.2013
Dr. R. Jeyabaskaran, Senior Scientist (RGP ₹ 8,000/-)	Senior Scientist (RGP ₹ 9,000/-)	CMFRI Hqrs.	06.03.2012
Dr. A.K. Abdul Nazar, Sr.Scientist (RGP ₹ 8,000/-)	Senior Scientist (RGP ₹ 9,000/-)	Mandapam RC	04.02.2012
Dr. (Smt.) GeethaSasikumar, Scientist	Senior Scientist	Mangalore RC	11.07.2009
Dr. (Smt.) S. Lakshmi Pillai, Scientist	Senior Scientist	CMFRI Hqrs.	21.06.2010
Dr. (Smt.) P.S. Swathilekshmi, Scientist	Senior Scientist	Mangalore RC	30.08.2010
Dr. KajalChakraborthy, Scientist	Senior Scientist	CMFRI Hqrs.	16.04.2012
Dr. S.R. Krupesha Sharma, Scientist	Senior Scientist	Karwar RC	25.04.2009
Dr. (Smt.) Sobha Joe Kizhakudan, Scientist (RGP ₹ 7,000/-)	Scientist (RGP ₹ 8,000/-)	Madras RC	05.07.2009
Dr. (Smt.) Mini K.G, Scientist (RGP ₹ 7,000/-)	Scientist (RGP ₹ 8,000/-)	CMFRI Hqrs.	02.11.2009
Dr. (Smt.) RekhadeviChakraborthy, Scientist (RGP ₹ 6,000/-)	Scientist *RGP ₹ 7,000/-)	CMFRI Hqrs.	17.12.2007
Dr. (Smt.) SandhyaSukumaran, Scientist (RGP ₹ 6,000/-)	Scientist (RGP ₹ 7,000/-)	CMFRI Hqrs.	01.01.2009
Shri. V. Venkatesan, Scientist (RGP ₹ 6,000/-)	Scientist (RGP ₹ 7,000/-)	CMFRI Hqrs.	01.01.2009
Dr. SatyanarayanSethi, Scientist (RGP ₹ 6,000/-)	Scientist (RGP ₹ 7,000/-)	Madras RC	27.06.2009
Dr. Subhadeep Gosh, Scientist (RGP ₹ 6,000/-)	Scientist (RGP ₹ 7,000/-)	Visakhapatnam RC	27.06.2009
Dr. G. Tamilmani, Scientist (RGP ₹ 6,000/-)	Scientist (RGP ₹ 7,000/-)	Mandapam RC	07.01.2012
Dr. M. Sakthivel, Scientist (RGP ₹ 6,000/-)	Scientist (RGP ₹ 7,000/-)	Mandapam RC	08.01.2012
Dr. V. SrinivasaRaghavan, Scientist (RGP ₹ 6,000/-)	Scientist (RGP ₹ 7,000/-)	Madras RC	07.01.2012
Shri. M. Samuthiram, UDC	Assistant	Tuticorin RC	17.12.2012
Shri. C.K Sivadas, UDC	Assistant	CMFRI Hqrs.	19.12.2012
Shri. Tomy Prince M.J,UDC	Assistant	CMFRI Hqrs.	19.12.2012
Smt. N.G. Supriya, UDC	Assistant	Calicut RC	21.12.2012
Smt. J. Sudhadevi, SSS	T-1 (Field Assistant)	CMFRI Hqrs.	02.01.2013
Smt. P. Renuka, SSS	T-1 (Field Assistant)	Calicut RC	01.01.2013
Shri. K. Murugan, SSS	T-1 (Field Assistant)	CMFRI Hqrs.	01.02.2013
Shri. MakwanaSomapitha, SSS	T-1 (Field Assistant)	Veraval RC	02.02.2013
Shri. D. BhaskaraRao, SSS	T-1 (Field Assistant)	Visakhapatnam RC	02.02.2013 AN

RE-DESIGNATION

Name & Designation	Res-designated as	Centre	w.e.f
Dr. (Smt.) U. Ganga, Scientist	Senior Scientist	CMFRI Hqrs.	25.04.2011
Dr. (Smt.) S. Jasmine, Scientist	Senior Scientist	Vizhinjam RC	04.11.2011
Dr. (Smt.) Rekha J. Nair, Scientist	Senior Scientist	CMFRI Hqrs.	30.01.2012

TRANSFERS

Name & Designation	From	To	w.e.f.
Shri V. Sethuraman T-4 (Sr. Technical Assistant)	Mandapam RC	Nagapattinam FC	02.01.2013
Shri P. Jaiganesh, T-3 (Technical Assistant)	Cuddalore FC	Madras RC	08.02.2013
Shri P.K. Harikumar T-7-8 (Technical Officer)	CMFRI Hqrs.	KVK of CMFRI	08.03.2013

Shri M. Shanmughavelu
T-1 (Field Assistant)
Mandapam RC
27.01.2013

Obituary

With profound sorrow CMFRI family pay homage to our beloved colleague Shri. M. Shanmughavelu

Newly built International Trainee's Hostel at Mandapam Regional Centre of CMFRI

केंद्रीय समुद्री मात्स्यिकी अनुसंधान संस्थान
CENTRAL MARINE FISHERIES RESEARCH INSTITUTE
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CMFRI Newsletter

Cadalmin, the CMFRI Newsletter is a quarterly publication of the Central Marine Fisheries Research institute, Cochin. The publication gives an insight into the major events of the quarter, besides highlighting the salient findings in the research front and dissemination of technological know-how to the farming community.